



KSU Pollution Prevention Institute

KSU Pollution Prevention Institute
Nancy Larson

PPI's Philosophy

Help Kansas business and industry

- Look for ways to eliminate and reduce pollution before it is generated
- Increase the efficient use of raw materials, energy, water, and other resources
- Assist businesses with environmental compliance

Pollution Prevention (P2) Act of 1990

Shifted the focus from
“end-of-pipe”
pollution treatment
and cleanup, to
policies, technologies,
and processes which
prevent and minimize
the generation of
pollution

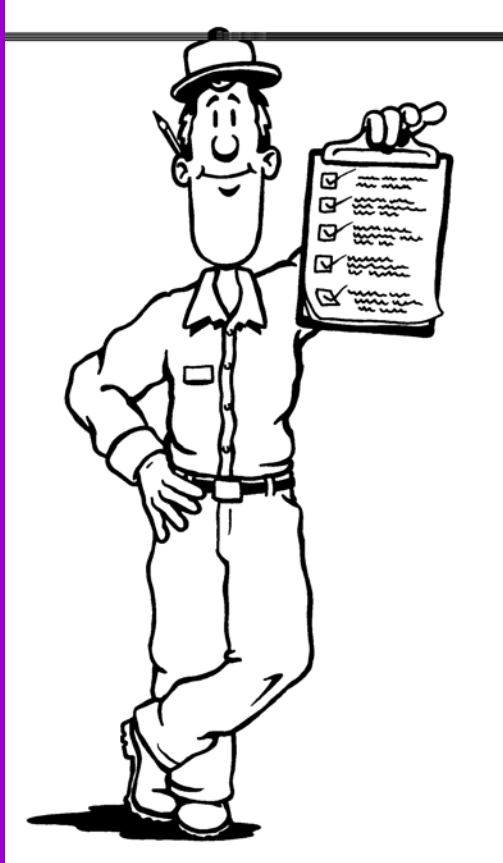


Small Business Environmental Assistance Program



- Operated by KSU PPI Staff
- Provides technical assistance
- Publishes newsletter, *AIRLines*

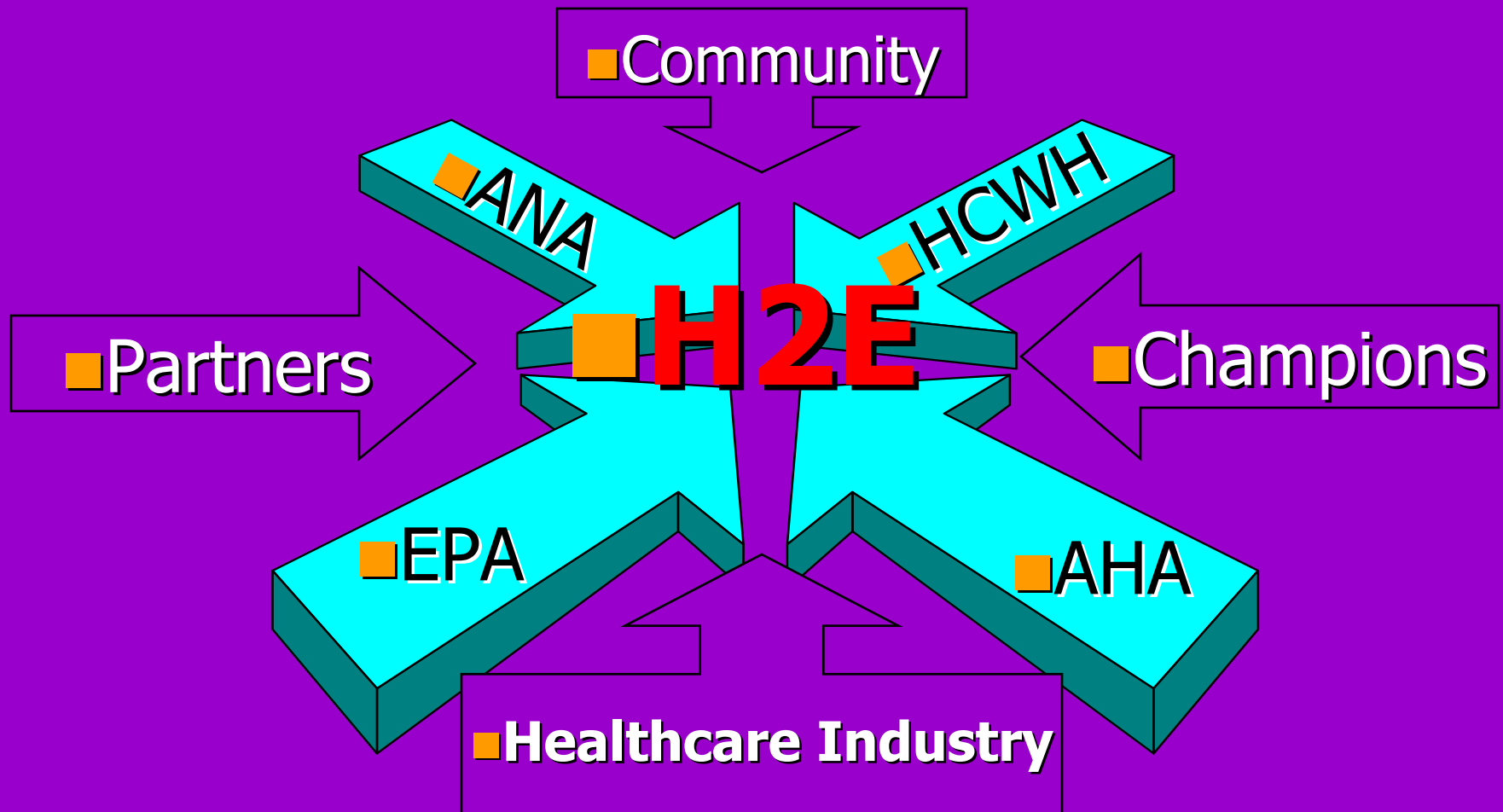
PPI Services



- Operate SBEAP for State
- On-site environmental compliance assistance
 - Free
 - Confidential
 - Nonregulatory
- Workshops
- Publications
- Special projects – KH2E

Hospitals for a Healthy Environment

Collaborative Effort to Change the Culture of an Entire Industry....



H2E GOALS

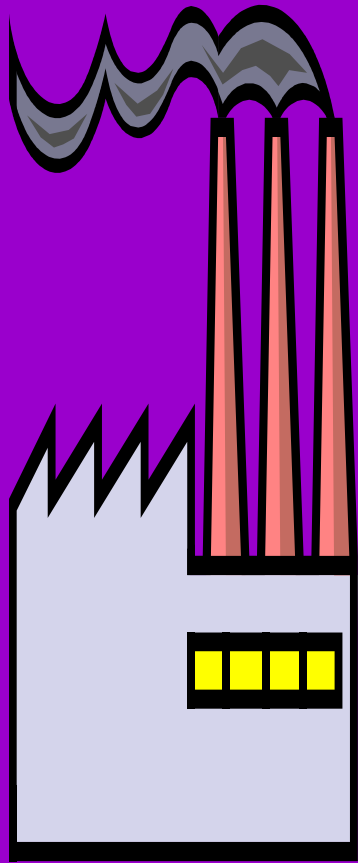


- Virtually eliminate mercury waste by year 2005
- Reduce total waste volume by 33% by year 2005, by 50% by 2010
- Identify and reduce PBT chemicals and other hazardous substances in hospitals through pollution prevention and waste reduction

Kansas Healthcare for a Healthy Environment (KH2E)

- 2003 – Grant to introduce national H2E program
 - KH2E advisory board
 - Workshop
 - Site visit to Kansas hospitals
 - Encourage hospitals to join H2E
 - Articles to their association newsletters
- Need new money

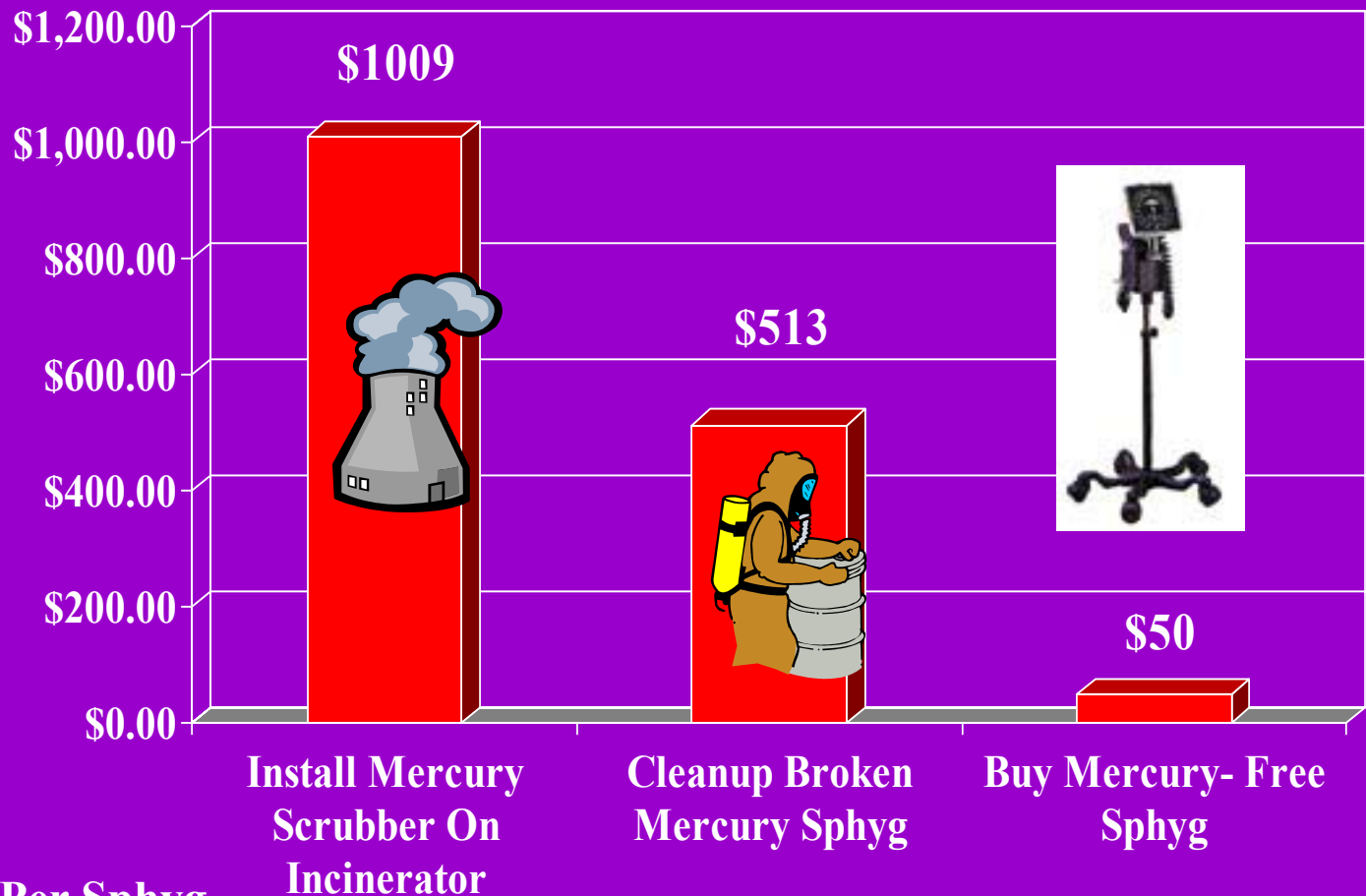
Why Healthcare?



- They are the fourth largest source of mercury. NAS data
- Generate more than 2.4 million tons of waste each year.
- Use medical and solid waste incinerators which are a source of dioxins and other hazardous pollutants, including mercury emissions.
- Charged with care for the health of their communities...prevention.

H2E Makes Sen\$e

Costs Increase Downstream



Cost Per Sphyg

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Medical Uses of Mercury

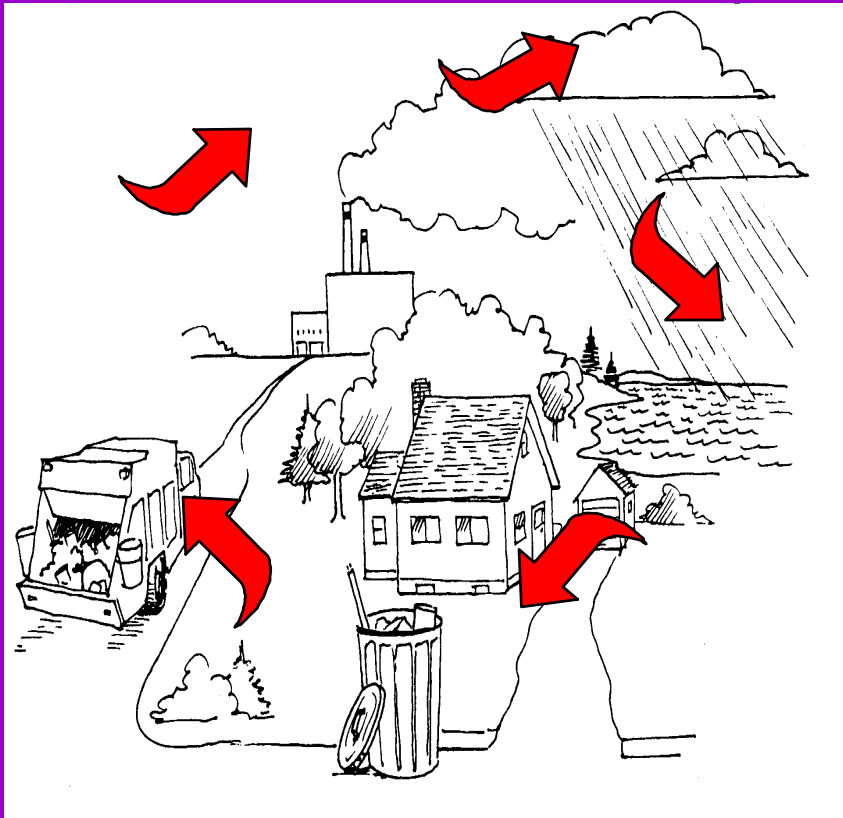
- Thermometers
- Sphygmomanometers
- Esophageal dilators
- Cantor tubes
- Feeding tubes
- Lab chemicals
- Medical batteries
- Pharmaceutical preservatives
- Cleaning solutions
- Fluorescent lights
- Thermostats
- Pressure gauges
- Electric switches
- **Dental amalgam**

Mercury is a PBT

Persistent bioaccumulative toxin

- One of more than 50 PBTs listed by EPA
- Identified as a high priority PBT
- EPA proposes 50% reduction by 2005
- Priority PBTs
 - Alkyl-Lead
 - Benzo(a)Pyrene
 - **DIOXINS/FURANS**
 - Hexachlorobenzene
 - **MERCURY AND COMPOUNDS**
 - Octachlorostyrene
 - PCBs
 - PESTICIDES
 - Aldrin/Dieldrin, Chlordane
 - Mirex, DDT(+DDD+DDE), Toxaphene

Mercury Circulation in the Environment



- Emitted to the air
- Emitted directly to the water or soil
- Travels long distances, then precipitates out with rain fall, entering lakes and streams
- Not “treatable;” must be prevented

Mercury – The Risk to Human Health

- Mercury is well known for its toxic effects
- Methyl mercury is the most toxic form
- Long term exposure can permanently damage brain, kidneys and developing fetus



Mercury Environmental Concerns

- Persistent in the environment
- Travels long distances in the environment
- Converted to methylmercury in aquatic environments
- Bioaccumulates in fish, poisoning fish-eating animals such as humans and eagles



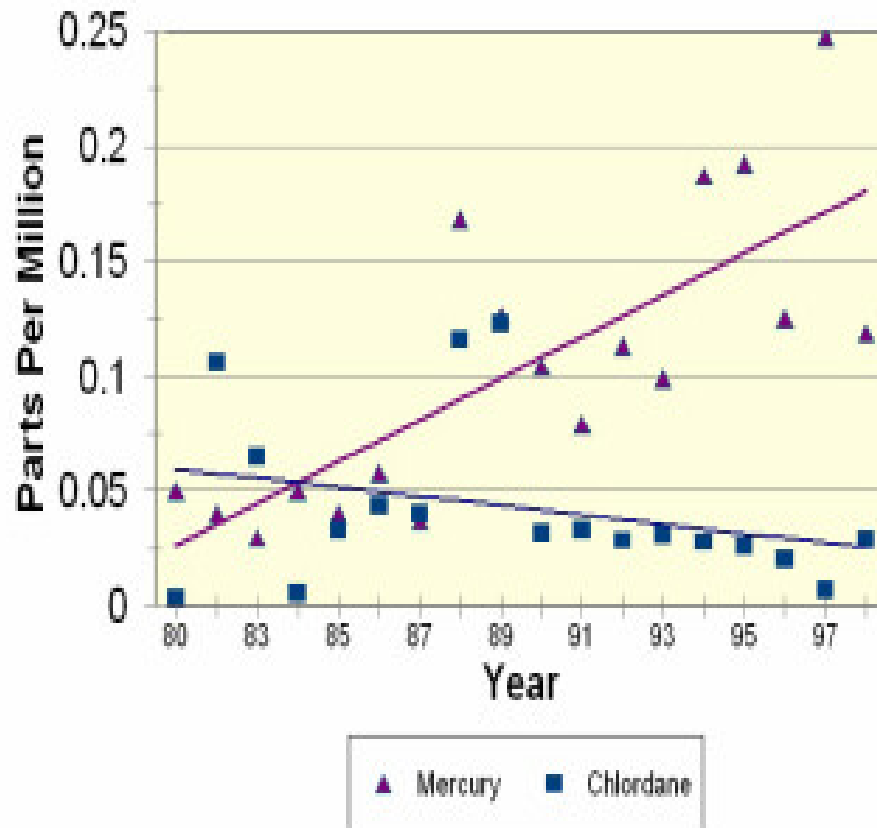
Mercury Health Concerns



- ~1 teaspoon/22 acre lake/post warning or 1 gram/1 acre lake
- Typical thermometer contains .5 grams of mercury, spygmo ~2.5 lbs
- Spills 1 lb or more should be reported to KDHE 800-282-9790
- Massachusetts statewide fish consumption warning 7/01
- Minnesota lakes

Mercury Trends in Kansas

Figure 2. Kansas Fish Fillet Trends



- “Nationwide and at all long-term, fish-tissue monitoring sites in Kansas, mercury appears to be on the increase.”

— *Kansas Environment 2000* report

Consumption Advisories

- Federal advisory
- States may make own based on their lakes
- Generally one meal of fish per week
- Some states one meal per month



Healthcare Waste Reduction

Mercury and other
PBT's are a priority

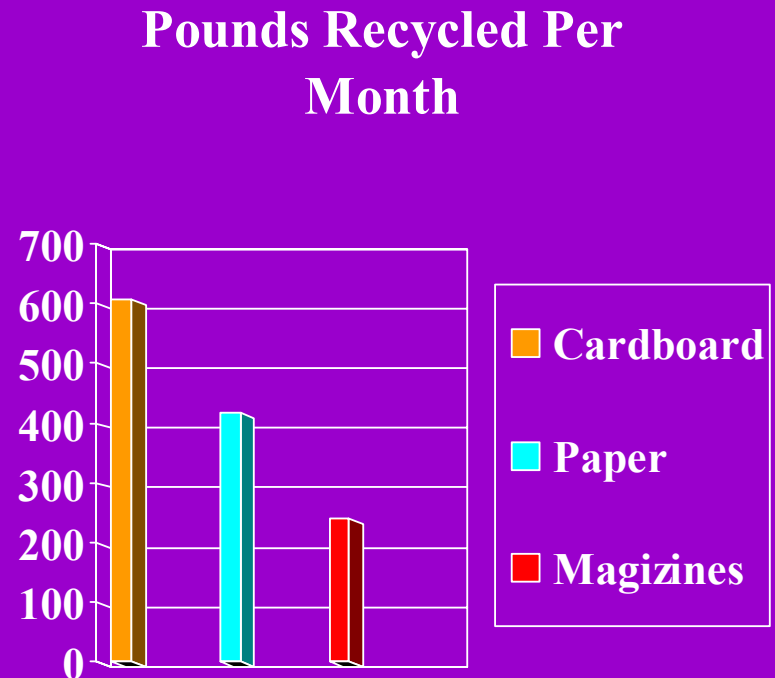
- So much reduction potential:
- Hazardous waste
- Medical service waste
- Solid waste
 - Reduce – EPP
 - Reuse – mission packs, basins
 - Compost/recycle – multiple waste streams
- Energy
- Water conservation

KH2E Accomplishments

- Coordinated with multiple state healthcare related organization – KHA, KNA, KHEA, KPHA...
- Formed advisory task force
- Six hour H2E and environmental compliance workshop – over 50 attended
- Published numerous H2E related articles
- Several site visits
- Gathering case study data
- Region 7 mercury task force
- Momentum growing...but money running out

Kansas Hospitals Reducing Waste - Reducing Costs

- Memorial Hospital – Abilene, KS
 - First KS H2E partner, third in Region 7
 - Nearing mercury elimination
 - Solid waste reductions
 - MSW reduction 62% from 1999 to 2003 ~\$400/month
 - KDHE P2 award 2003



Kansas Healthcare Reducing Wastes

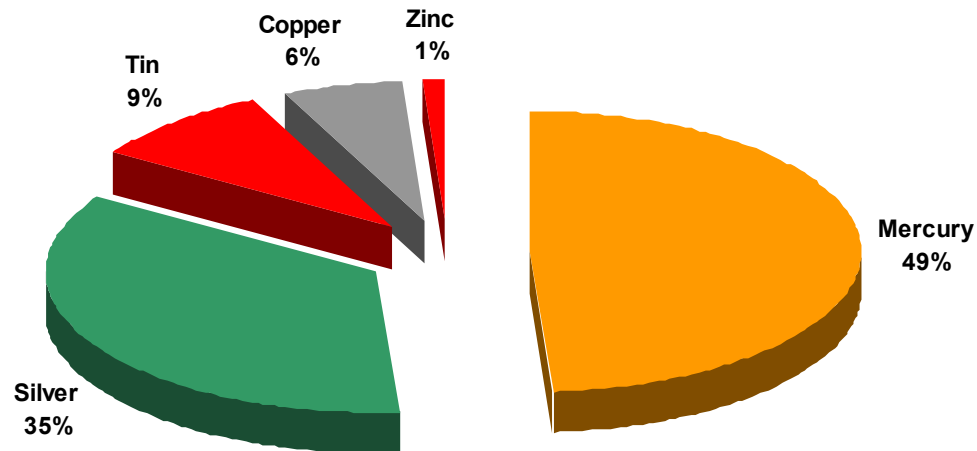
- 100 bed facility spends ~ \$52,000 on MSW disposal annually.
 - Informal red bag audit suggests facility could reduce these costs by up to 50% by defining MSW and training staff. (Annually, per bed – spend \$322 more than Memorial)
- County EMS eliminates use of all mercury after a spill costs them \$\$\$.
- Beth Israel Hospital – brochure example

What We are Learning About Dental Amalgam

- Third largest use of mercury
- One main contributor of mercury in WW
- Mercury at WW treatment plants
- Amalgams are primary source of mercury in human waste
- Mercury emissions due to cremations (~1 gram per cremation)

Why Is Dental Amalgam a Problem?

Composition of a Common Dental Amalgam



Contact us



- Environmental Hotline
800/578-8898
- In Wichita area
call Nancy at
316/722-7721, ext 104
Nlarson@ksu.edu
- www.sbeap.org
- www.h2e-online.org